

Remarks

Review and reconsideration of this application are respectfully requested.

The specification has been amended at page 5, where the second full paragraph has been corrected to make the specification commensurate with the preferred chlorine-containing polyolefins as set forth in the claims.

No new matter is presented by this amendment.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

1. Claims 28-42, drawn to an article, classified in class 428, subclass 36.92.
2. Claims 43-60, drawn to a method, classified in class 264, subclass 209.6.

In view of the restriction requirement, applicant hereby affirms his previous election of Group I, claims 28-42, for further prosecution in this application. Claims 43-60 have been canceled; however, applicant reserves the right to prosecute the canceled claims in a divisional application.

Claims 28-30, 33-34, 39-41 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,623,822. The Examiner states that Independent claim 28 of the present application contains the term "comprising" which does not preclude the third component present in the chlorinated polyolefin mixture recited by claim 1 of '822.

U.S. Patent No. 6,623,822 claims a "chlorine-containing polyolefin selected from the

group consisting of a mixture of chlorinated polyethylene, chlorinated polypropylene and chlorinated copolymer of ethylene and propylene; and a mixture of chlorosulfonated polyethylene, chlorosulfonated polypropylene and chlorosulfonated copolymer of ethylene and propylene.” Applicant submits that these two mixtures are specifically excluded from the present claims which states that “with the proviso that mixtures of ....., chlorinated polyethylene, chlorinated polypropylene and chlorinated copolymer of ethylene and propylene; and a mixtures of chlorosulfonated polyethylene, chlorosulfonated polypropylene and chlorosulfonated copolymer of ethylene and propylene are excluded.” Further more, the term “comprising” is employed to define the thermoplastic vulcanizate which comprises “ a thermoplastic polyurethane” and “ a chlorine-containing polyolefin”, wherein the chlorine-containing polyolefin is defined by a Markush group. Therefore, the term “comprising” does not extend to the members of the Markush group. Accordingly it is believed that a terminal disclaimer is not necessary to remove the non-statutory double patenting rejection.

Claims 28-42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 22, 24-25, 30-31, 33, 35, 40-52 of copending application No. 10/262,813. The Examiner alleges that although the conflicting claims are not identical, they are not patentably distinct from each other because, while ‘812 does not specifically claim a hose, it claims a thermoplastic vulcanizate for use in the manufacture of a hose. Hence, the term “hose” is present in the claim, which would lead to the hose specifically claimed by the present invention.

Applicant submits that claims directed to a hose are inherently distinct from claims directed to a vulcanizate. It is immaterial whether or not the vulcanizate can be used to make a hose. Furthermore, that the present application is a continuation application of U.S. Serial No. 10/262,795, now U.S. Patent No. 6,623,822, which is a continuation of U.S. Serial No. 09/311,310, now U.S. Patent No. 6,524,673, and that copending application 10/262,813, which

forms the basis for the provisional rejection, is a divisional of U.S. Patent application No. 09/311,310, now U.S. Patent No. 6,524,673. In view of the common tie between all of the applications, the expiration date of all patents issuing on any of these applications will be the same as the expiration date of the first issued patent. However, in order to place this application in condition for allowance, applicant is submitting two terminal disclaimers simultaneously herewith. It is believed that such terminal disclaimers are effective to remove both the non-statutory double patenting rejection of claims 28-30, 33-34, 39-41 over claim 1 of commonly assigned U.S. Patent No. 6,623,822, and the provisional rejection of claims 28-42 under the judicially created doctrine of obviousness-type double patenting rejection over copending Application No. 10/262,813.

Claims 28-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that it is unclear how the thermoplastic polyurethane can be thermoplastic when it is crosslinked.

Applicant submits that the claims simply confirm that the matrix comprises a thermoplastic vulcanizate which comprises a thermoplastic polyurethane as well as a chlorine-containing polyolefin and a crosslinking agent, and that the vulcanizate is crosslinked in the matrix. Applicant is not trying to characterize the polyurethane in the final vulcanizate. It is believed that such term is appropriate to define the polyurethane as thermoplastic. However, the Examiner will note that the claims have been amended to recite "hose" rather than "thermoplastic hose".

Claims 28-30, 32-35, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogoe et al (US 5,457,146) in view of Warren et al (US 5,051,474) as evidenced by Reischl et al (US 3,243,475). Regarding claim 28, the Examiner alleges that Ogoe et al teaches a composition comprising a thermoplastic polyurethane, chlorinated polyethylene and a peroxide crosslinking agent which crosslinks the chlorinated (or sulfonated) polyethylene. Hence the composition is a

thermoplastic vulcanizate. The ranges of the components are in the ranges of those presently claimed. It is further alleged that composition is useful in the production of molded articles of parts and components for use in the automotive industry and has a desirable balance of impact and heat resistance properties. Therefore, it would have been obvious to one of ordinary skill in the art to have made the thermoplastic vulcanizate inherently capable of withstanding temperatures up to about 300°F for the manufacture of a high performance hose. The thermoplastic vulcanizate is inherently capable of resisting chemical attack by virtue of its composition.

Applicant contends that Ogoe et al neither teaches nor suggests an extruded high performance, chemical resistant hose capable of resisting temperatures up to about 300° F, for prolonged period of time. Ogoe et al teaches a composition containing a thermoplastic polyurethane and a chlorinated polyethylene component. In an alternate embodiment, a chlorosulfonated polyethylene may be substituted for the chlorinated polyethylene. The Composition of Ogoe et al is designed to be used in the production of films, fibers, extruded sheets, multilayer laminates, molded and shaped articles such as data storage apparatus, appliance and the like. There is no teaching that the composition can be extruded to form specialized high performance, chemical resistant hoses, such as power steering hoses, which are capable of withstanding temperatures up to about 300° F for prolonged periods of time. The Examiner will note that the present claims specifically preclude the presence of chlorinated polyethylene, chlorosulfonated polyethylene and mixtures of chlorinated polyethylene and chlorosulfonated polyethylene. Accordingly, it is respectfully requested that this rejection be withdrawn.

Regarding claim 42, the Examiner alleges that Ogoe et al teach a peroxide crosslinking agent and a diamine chain extender. The diamine is a polyamine containing two functional groups. The diamine chain extender also functions as a crosslinking agent as evidenced by

Reischl. Therefore, it would have been obvious to one of ordinary skill in the art to have used a polyamine as a crosslinking agent in place of, or in tandem with, the peroxide crosslinking agent of Ogoe et al, in order to obtain a thermoplastic vulcanizate with different properties, due to the

difference in crosslinked sites by virtue of the different crosslinking agent. Ogoe et al fail to teach that the thermoplastic vulcanizate is made into a hose, that the chlorinated polyethylene and chlorosulfonated polyethylene are mixed together, or a mixture of any of the other claimed chlorinated polyolefins.

Applicant submits that the Ogoe et al reference has been sufficiently discussed above and that Reischl does not effectively provide sufficient evidence to support the Examiner's allegation that the present invention would be obvious in view of the combination of Ogoe et al in view of Reischl.

Regarding claims 28-29, 32-35, Warren has a composition comprising a thermoplastic polyurethane in an amount of about 20 to about 90 percent by weight which overlaps the claimed range of from about 30 to 70 weight percent and a chlorine-containing polyolefin which can be a mixture of chlorinated polyethylene and chlorosulfonated polyethylene, a mixture of chlorinated polyethylene and chlorinated polypropylene; a mixture of chlorosulfonated polyethylene and chlorinated polypropylene; chlorinated polyethylene and chlorinated copolymer of ethylene and propylene; a mixture of chlorinated polypropylene and chlorinated copolymer of ethylene and propylene; or a mixture of chlorosulfonated polyethylene and chlorinated copolymer of ethylene and propylene. Warren teaches mixtures of the chlorine-containing polyolefins present in the amount of from about 0.2 to about 60 percent by weight. The crosslinking agent used is a polyisocyanate which crosslinks the thermoplastic polyurethane in the thermoplastic vulcanizate.

The Examiner also alleges that Warren teaches that thermoplastic vulcanizates (elastomers) are used in hoses. Therefore it would have been obvious to one skilled in the art to have made a hose from the thermoplastic vulcanizate comprising mixtures of chlorine-

containing polyolefins in a thermoplastic polyurethane matrix, as taught by Warren, in order to obtain a molded hose article with the desired balance of impact and resistance properties, as taught by Ogoe et al, inherently capable of withstanding temperatures up to about 300°F.

Applicant contends that Warren does not teach thermoplastic vulcanizates containing thermoplastic polyurethane and the chlorine-containing compounds of the present invention, or for that matter Ogoe, would be effective in the extrusion a high performance, chemical resistant hose, such as power steering hoses, capable of withstanding temperatures of about 300° F, for prolonged period of time. The Examiner has pointed to col. 2, line 6 of Warren, where the Examiner states that Warren teaches that thermoplastic vulcanizates are used in hoses. What Warren discloses in the background of his invention is that a new class of melt processible thermoplastic elastomers based on compatible blends of an ethylene copolymer and a vinyl or vinylidene halide which are particularly effective in applications involving seals, weatherstrips. Hoses, wires and cables. Therefore the Examiner alleges that it would have been obvious to one of ordinary skill in the art to have made a hose article with the desired balance of impact and heat resistance properties as taught by Ogoe et al, inherently capable of withstanding temperatures up to about 300° F.

Applicant submits that neither the thermoplastic elastomer (blends of ethylene copolymers) not the halide-containing materials (vinyl or vinylidene halides) are comparable to the components of the present invention. Therefore, one would not be led to the present invention from the teachings of Ogoe et al, Reischl and Warren, either alone or in combination with each other.

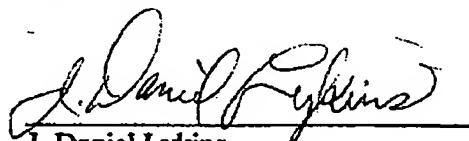
Furthermore, the Examiner alleges that the thermoplastic vulcanizate of Ogoe et al is inherently capable of resisting chemical attack by virtue of its composition, and that it is also capable of withstanding temperatures up to about 300° F.

Applicant can find no support for such allegation. Even if the vulcanizate of Ogoe et al was able to resist chemical attack and be able to withstand temperatures of up to about 300° F, the composition is distinctly different from the present composition.

In view of the amendments to the claims and the foregoing remarks, it is sincerely believed

that the present application is now in condition for allowance, and an early indication thereof is earnestly solicited.

Respectfully submitted,

  
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